

Amendments to the Specification:

Please replace the paragraph starting at page 26, line 6 with the following rewritten paragraph:

--In some embodiments, chimeras are assembled as monomers, or hetero- or homo-multimers, and particularly as dimers or tetramers, essentially as illustrated in WO 91/08298. In a preferred embodiment, the AL-2 extracellular domain sequence is fused to the N-terminus of the C-terminal portion of an antibody (in particular the Fc domain), containing the effector functions of an immunoglobulin, e.g., immunoglobulin G₁ (IgG-1). It is possible to fuse the entire heavy chain constant region to the AL-2 extracellular domain sequence. Preferably a sequence beginning in the hinge region just upstream of the papain cleavage site (which defines IgG Fc chemically; residue 216, taking the first residue of heavy chain constant region to be 114, or analogous site of other immunoglobulins) is used in the fusion. In one embodiment, and AL-2 amino acid sequence is fused to the hinge region and CH2 and CH3 or CH1, hinge, CH2 and CH3 domains of an IgG-1, IgG-2, or IgG-3 heavy chain. The precise site at which the fusion is made is not critical, and the optimal site can be determined by routine experimentation. The immunoglobulin portion can be genetically engineered or chemically modified to inactivate a biological activity of the immunoglobulin portion, such as T-cell binding, while retaining desirable properties such as its scaffolding property for presenting AL-2 function to an axon or target cell. Chimeras can be assembled as multimers, particularly as homo-dimers or -tetramers. Generally, these assembled immunoglobulins will have known unit structures. A basic four chain structural unit is the form in which IgG, IgD, and IgE exist. A four unit is repeated in the higher molecular weight immunoglobulins; IgM generally exists as a pentamer of basic four units held together by disulfide bonds. IgA globulin, and occasionally IgG globulin, may also exist in multimeric form in serum. In the case of multimers, each four unit may be the same or different. Alternatively, the AL-2 extracellular domain sequences can be inserted between immunoglobulin heavy chain and light chain sequences such that an immunoglobulin comprising a chimeric heavy chain is obtained. In this embodiment, the sequences are fused to the 3' end of an immunoglobulin heavy chain in each arm of an immunoglobulin, either between the hinge and the CH2 domain, or between the CH2 and CH3 domains (see Hoogenboom, *et al.*, *Mol. Immunol.*, 28:1027-1037 (1991)). The presence of an immunoglobulin light chains is not

required in the immunoadhesins of the present invention; an immunoglobulin light chain might be present either covalently associated to a immunoglobulin heavy chain fusion polypeptide, or directly fused to the AL-2 extracellular domain. In the former case, DNA encoding an immunoglobulin light chain is typically coexpressed with the DNA encoding the AL-2 immunoglobulin heavy chain fusion protein. Upon secretion, the hybrid heavy chain and the light chain will be covalently associated to provide an immunoglobulin-like structure comprising two disulfide-linked immunoglobulin heavy chain-light chain pairs. Preparation of such structure are, for example, disclosed in U.S. Patent No. 4,816,567 issued 28 March 1989. The immunoglobulin sequences used in the construction of the immunoadhesins of the present invention can be from an IgG immunoglobulin heavy chain constant domain. For human immunoadhesins, the use of human IgG1 and IgG3 immunoglobulin sequences is preferred. A major advantage of using IgG1 is that IgG1 immunoadhesins can be purified efficiently on immobilized protein A. In contrast, purification of IgG3 requires protein G, a significantly less versatile medium. However, other structural and functional properties of immunoglobulins should be considered when choosing the Ig fusion partner for a particular immunoadhesin construction. For example, the IgG3 hinge is longer and more flexible, so it can accommodate larger 'adhesin' domains that may not fold or function properly when fused to IgG1. Another consideration may be valency; IgG immunoadhesins are bivalent homodimers, whereas Ig subtypes like IgA and IgM may give rise to dimeric or pentameric structures, respectively, of the basic Ig homodimer unit. For AL-2-Ig immunoadhesins designed for *in vivo* application, the pharmacokinetic properties and the effector functions specified by the Fc region are important as well. Although IgG1, IgG2 and IgG4 all have *in vivo* half-lives of 21 days, their relative potencies at activating the complement system are different. IgG4 does not activate complement, and IgG2 is significantly weaker at complement activation than IgG1. Moreover, unlike IgG1, IgG2 does not bind to Fc receptors on mononuclear cells or neutrophils. While IgG3 is optimal for complement activation, its *in vivo* half life is approximately one third of the other IgG isotypes. Another important consideration for immunoadhesins designed to be used as human therapeutics is the number of allotypic variants of the particular isotype. In general, IgG isotypes with fewer serologically-defined allotypes are preferred. For example, IgG1 has only four serologically-defined allotypic sites, two of which (G1m1 and 2) are located in the Fc region, and one of these sites G1m1, is non-immunogenic. In contrast, there are 12

serologically-defined allotypes in IgG3, all of which are in the Fc region; only three of these sites (G3m5, 11 and 21) have one allotype which is nonimmunogenic. Thus, the potential immunogenicity of a γ 3 immunoadhesin is greater than that of a γ 1 immunoadhesin.--

Please replace the paragraph starting at page 33, line 29 with the following rewritten paragraph:

--Furthermore, cells derived from multicellular organisms also may be used as hosts for the cloning or expression of DNAs useful in the invention. Mammalian cells are most commonly used, and the procedures for maintaining or propagating such cells *in vitro*, which procedures are commonly referred to as tissue culture, are well known. Kruse and Patterson, eds., *Tissue Culture* (Academic Press, 1977). Examples of useful mammalian cells are human cell lines such as 293, HeLa, and WI-38, monkey cell lines such as COS-7 and VERO, and hamster cell lines such as BHK-21 and CHO, all of which are publicly available from the American Type Culture Collection (ATCC), ~~Rockville, Maryland 20852 USA~~ 10801 University Boulevard, Manassas, VA 20110-2209.--